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EXAMINER

DANIELS, MATTHEW J

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/681,497

Applicant(s)

BALES, STEPHEN G.

Examiner

Matthew J. Daniels

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005 and 29 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-12, 14-18 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-12, 14-18 and 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/16/05, 11/8/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In the replies filed 7 December 2005 and 29 December 2005, Claims 7, 13, 19, 28 and 29 were cancelled, Claims 1-3, 11, 12, 14, 16-18, 22, and 24-27 were amended. There are no new claims.

Information Disclosure Statement

2. The information disclosure statement filed 16 September 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

The second reference (Briggs) does not appear to be present in the file. A copy is requested for proper consideration.

Specification

3. The amendments filed 7 December 2005 and 29 December 2005 are objected to under 35 U.S.C. 132(a) because they introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: All changes to paragraphs [0015], [0016], and [0017] in the amendments filed 7 December 2005 and 29

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December 2005 are believed to be new matter because they are directed to different values than originally disclosed.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 1, 2, 16, 17** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. All amended values in these claims are believed to be new matter. This rejection may be overcome by citing the portion of the specification as originally filed which contained the limitations now claimed.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

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provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. **Claims 1-11, 14-27, and 31** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1,2,5-7,10-12, 15-17, and 20 of copending Application No. 11/149,808 in view of Ohkawa (USPN 4891399).

Instant Claims 1 and 16 and Claims 1 and 11 of the '808 application are both drawn to methods for making lignocellulosic products containing a boron-containing compound. Instant Claims 1 and 16 are different because they are directed to a boron-containing fungicide and not to a borate compound. However, borate compounds are claimed in the instant application in Claims 6-11, 14, and 22-27. Claims 1 and 11 of the '808 application are different because they include zinc oxide and forming by heat and pressure. However, these differences would have been obvious because forming thermoplastic materials obviously requires heat and pressure, and because zinc oxide is a common and obvious filler in thermoplastic materials (See Ohkawa, Abstract). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate zinc oxide as a filler in the instant invention in order to reduce the cost of the product.

Instant Claims 4, 5, 15, 20, 21, and 31 are drawn to polymers and lignocellulosic fillers. However, these aspects are obvious over Claims 2, 5, 12, and 15 of the '808 application which claim the same polymers and lignocellulosic fillers.

Instant Claims 2, 4, and 17-19 are drawn to the amount of boron-containing fungicide. However, these aspects are obvious over Claims 6, 7, 16, and 17 of the '808 application, which claim the same amounts.

This is a provisional obviousness-type double patenting rejection.

6. **Claims 1-4, 6-11, 14-20, 22-27, and 31** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/909,053 in view of Nadkarni (USPN 5514478).

Instant Claims 1 and 16 and Claim 1 of the '053 application are both drawn to methods for making lignocellulosic products containing a boron-containing compound. Instant Claims 1 and 16 are different because they are directed to a boron-containing fungicide and not to a borate compound. However, borate compounds are claimed in the instant application in Claims 6-11, 14, and 22-27. Claims 1 of the '053 application is different because it includes a dust reducing amount of moisture prior to forming the composite. However, this difference would have been prima facie obvious to one of ordinary skill for two reasons: 1) firstly, because borates including zinc borate are known to be hydrophilic (Nadkarni, 4:44-55); and 2) because the common commercial form of zinc borate is the hydrated form, which contains between 1 and 20% moisture as now claimed in the '053 application. In view of Nadkarni's teachings and the hydrated form of zinc borate being the commercial form, it would have been inherent or obvious that zinc borate or other borates would contain a percentage of water.

Instant Claims 6-11 and 22-25 are drawn to particular borates. However, these aspects are obvious over Claims 2-9 of the '053 application which claim the same borates.

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Instant Claims 2-3, and 17-19 are drawn to the amount of boron-containing fungicide.

However, these aspects are obvious over Claims 2 and 5 of the '053 application, which claim the same amounts.

Instant Claims 4, 15, 20 and 31 are drawn to particular lignocellulosic fillers. However, these aspects are obvious over Claims 10 and 11 of the '053 application, which claim the same lignocellulosic filler.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1-5, 14-17, 20, 21, and 31** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Aida (USPN 5221781). **As to Claim 1**, Aida teaches a method for forming lignocellulosic thermoplastic composite products comprising incorporating an amount of boron-containing fungicide prior to forming the composite product (3:39-55, 6:18-21, 6:62-7:20). As to the new limitations directed to composites containing 25-75% lignocellulosic material, Aida teaches the following ranges:

100 parts resin (6:24-25)

5-200 parts organic fillers including wood powder (6:19-25)

5-200 parts of compounds including zinc borate (7:12-15)

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In the Examiner's interpretation, sufficient specificity exists to anticipate the claimed range.

Aida's teaching of 100 parts resin, 200 parts organic fillers, and 5 parts zinc borate falls within the claimed range (200 parts resin amounts to 65% by weight). In the alternative, the claimed range would have been prima facie obvious over Aida's teachings to adjust these ranges. **As to Claims 2 and 3**, Aida teaches the claimed range (7:12-28). **As to Claims 4 and 5**, Aida teaches at least wood and polyethylene (6:19 and 3:39-45). **As to Claims 14 and 15**, Aida teaches at least zinc borate and wood (6:67 and 6:19).

8. **As to Claim 16**, Aida teaches a method for forming lignocellulosic thermoplastic composite products comprising incorporating an amount of boron-containing fungicide prior to forming the composite product (3:39-55, 6:18-21, 6:62-7:20). As to the new limitations directed to composites containing 25-75% lignocellulosic material, Aida teaches the following ranges:

100 parts resin (6:24-25)

5-200 parts organic fillers including wood powder (6:19-25)

5-200 parts of compounds including zinc borate (7:12-15)

In the Examiner's interpretation, it is unclear whether sufficient specificity exists to anticipate the claimed range. However, Aida's teaching of 100 parts resin, 200 parts organic fillers, and 5 parts zinc borate falls within the claimed range (200 parts resin amounts to 65% by weight). In the alternative, the claimed range would have been prima facie obvious over Aida's teachings to adjust these ranges. **As to Claim 17**, Aida teaches 1.6% (7:12-15, 5 parts zinc borate to 300 parts resin and wood amounts to 1.6%). **As to Claims 20, 21, and 31**, Aida teaches at least wood and polyethylene (6:19 and 3:42).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 6, 8-12, 18, 19, 22, 24-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Aida (USPN 5221781) in view of Lloyd (USPN 6368529). Aida teaches the subject matter of Claims 1 and 16 above under 35 USC 102(b) or 35 USC 103(a). **As to Claim 6**, Aida is silent to calcium borate. However, Lloyd teaches calcium borate (Abstract). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Lloyd into that of Aida because a) Lloyd teaches that an additional advantage of producing products with calcium borate in place of conventionally used zinc borate is that the calcium borates have much better flow properties, making them easier to store and handle in processing equipment (9:1-5), b) because calcium borate is less toxic than zinc borate (8:50-67), and b) because calcium borate causes less wear to tools (1:45-60). **As to Claims 8-12**, Lloyd teaches at least calcium polytriborate and colemanite (3:39-41) that are either natural or synthetic (3:39-41). Aida teaches zinc borate (see the rejection of Claim 1 above). **As to Claims 18 and 19**, Lloyd teaches the claimed ranges (3:52-63). Aida also teaches the claimed ranges (7:12-15). **As to Claims 22, 24-27**, Lloyd teaches at least calcium polytriborate (3:39) that is either natural or synthetic (3:39-41), and nobleite (3:42).

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10. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aida (USPN 5221781) in view of Chow (USPN 5130352). Aida teaches the subject matter of Claim 16. See the rejection of Claim 16 under 35 USC 102(b). **As to Claim 30**, Chow teaches boric acid in polyethylene (2:41-65). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Chow into that of Aida in order to suppress odor (2:36-40).

Response to Amendment

11. The declarations under 37 CFR 1.132 filed 7 December 2005 are insufficient to overcome the rejections based upon Aida in view of Lloyd as set forth in the last Office action for the following reasons:

Long Felt Need

The Applicant asserts that a long felt need existed for the claimed invention with regard to mildew. However, as evidence rebutting the Applicant's position, the Examiner cites the following documents which show the use of calcium borates in plastics or wood plastic composites prior to the date of the instant application:

USPN 5482989 to Koskiniemi (2:16-33)

US Patent Application Publication 2003/0071389 to Manning (Page 3, Claim 8)

Because it can be shown that it was envisioned in the art to use calcium borate at the claimed loadings, the Applicant's declaration is found not to be persuasive.

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Unexpected results

The Applicant asserts that Lloyd could not have envisioned the unexpected results of calcium borate guarding against mold fungi such as *Aspergillus niger* because Lloyd performed only a wood decay test which provides weight loss data. However, as evidence rebutting the Applicant's position, the Examiner cites the following documents (which are the same as those shown immediately above) which show the use of calcium borates in plastics or wood plastic composites prior to the date of the instant application:

USPN 5482989 to Koskiniemi (2:16-33 and 5:38)

US Patent Application Publication 2003/0071389 to Manning (Page 3, Claim 8 and paragraph [0007])

Because it can be shown that it was envisioned in the art to use calcium borate at the claimed loadings for the purpose of protecting against fungi (which is shown in each of the documents above), the Applicant's declaration is found not to be persuasive.

Response to Arguments

12. Applicant's arguments filed 7 December 2005 and 29 December 2005 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:

- a) Applicant asserts that the '808 application does not constitute obvious-type double patenting because the ratios provided in the '808 application provide a synergistic and cost-effective result.
- b) Applicant asserts that the '053 application does not constitute obvious-type double patenting because Nadkarni does not teach that zinc borate is hydrophilic, but it is instead hydrophobic.

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- c) Aida does not teach the new limitations to Claims 1 and 16. Aida provides no guidance regarding the use of zinc borate, and Aida teaches that when using only inorganic flame retardants, 40 to 200 parts by weight is used (Applicant's 12/22/05 remarks, page 15).
- d) There is no motivation to combine the references because Lloyd teaches that an advantage of calcium borate in wood composites is the improved disposal of scrap material by burning, but industry recommendations for wood plastic composites are to recycle the composite material.
- e) There is no motivation to combine the references because Lloyd teaches that colemanite is roughly comparable to zinc borate in flow properties and resistance to fungi.
- f) There is no motivation to combine because Lloyd provides no supporting evidence regarding the effects on cutting tools of zinc borate and calcium borate. Applicant has found that Colemanite is slightly harder than zinc borate on the Mohrs scale, therefore, calcium borate should be comparable in wear, removing any potential advantage in this area. Additional evidence in the form of "Wood Fiber-Plastic Composites: Machining and Surface Quality" in August 2001 shows that wood plastic composites wear carbide tools six times more than white pine, and thus a small hardness difference, if any, at 4% loading would be insignificant.
- g) There is no motivation to combine Chow's teachings because the odor suppression taught by Chow is not a motive in an outdoor environment.

13. These arguments are not persuasive for the following reasons:

- a) The amount of zinc oxide which can be found in the '808 application is, in some embodiments, negligible compared to the amount of zinc borate. See, for example, Claims 1, 7, and 8. When the scopes of Claims 7 and 8 are considered, only 0.077 wt.% of the lignocellulosic

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composite is comprised of the zinc oxide, and 1.92 wt.% is comprised of the zinc borate. The Examiner submits that one of ordinary skill considering the conflicting claims would have found the claims prima facie obvious over one another due to the minor amounts of zinc oxide claimed.

b) The Examiner submits that in addition to Nadkarni's teaching, the common commercial forms of zinc borate are the hydrated zinc borates. Because it would have been obvious to provide hydrated zinc borates in the instant application, and because these zinc borates would have water contents that overlap with the preferred ranges of the '053 application, the claims of the instant application would have been obvious over the conflicting application.

c) Aida clearly teaches the claimed ratio of 200 parts wood powder to 100 parts resin (6:18-29). Although the disclosed limitation is more broad than the claimed limitation, the new limitation is believed to be new matter, and Aida teaches the claimed range with sufficient specificity to anticipate or render obvious the claimed amount of lignocellulose. Aida teaches "these flame retardants is in the range of 5 to 200...parts by weight based on 100 parts by weight of the resin" (7:12-15) and refers to the specific embodiments shown at 6:62-7:3, including zinc borate (6:67). Because only one compound is being selected from one list in the reference to Aida, the Examiner submits that the claimed borate compound is anticipated.

d) The ability to recycle components instead of burning does not appear to teach away from the combination.

e) Lloyd also teaches that zinc has a higher toxicity than calcium borate (8:50-67), and this aspect is also redundantly taught by Hatton (US 2002/0182431), and provides additional motivation for the combination to replace zinc borate with calcium borate.

f) The hardness values could not be located in the prior art submitted in this case. However, the Examiner submits that the hardness of the two materials, by themselves, would not provide sufficient evidence to show that there is no difference in wear rate of tools used to cut materials containing zinc and calcium borates. The Applicant's assertions regarding the insignificance of the claimed loading amounts on the wear behavior are noted, but appear to be opinion evidence only, and the Examiner submits that Lloyd's teachings are presumed to be valid regarding the wear rates.

g) The Examiner submits that when used as outdoor building materials, the motivation to reduce odor is still valid.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 7:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJD 4/1/06



MICHAEL P. COLAIANNI
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